



Estimation of impacts on groundwater quality in an urban area of Ljubljana

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Groundwater is a major source of drinking water supply in many cities worldwide. It is relatively stable and better-protected water resource compared to surface water and will have a vital role in assuring water-supply security in the future. In urbanized catchments numerous human activities (e.g. settling, industry, traffic, agriculture) take place which pose a threat to groundwater quality. For sustainable management of urban groundwater resources an integrated and adaptive approach based on continuous monitoring supported by modeling is needed.

The aim of presented study was to develop a model of environmental pressures and impacts on Ljubljansko polje aquifer which is the main source exploited for the public drinking water supply of the city of Ljubljana. It is based on estimation of contaminants emissions from different sources, coupled with numerical transport modelling which is used to assess the impact on groundwater quality. The model was built up on detailed analysis of nitrogen mass balance and validated with monitoring data – concentration measurements of relevant chemical parameters. Based on the model simulations impacts of different sources of pollution on groundwater quality was estimated and priority of measures for improvement of chemical status of groundwater was defined.